

## THE WAY WE AGE NOW

*Medicine has increased the ranks of the elderly. Can it make old age any easier?*

BY ATUL GAWANDE

The hardest substance in the human body is the white enamel of the teeth. With age, it wears away nonetheless, allowing the softer, darker layers underneath to show through. Meanwhile, the blood supply to the pulp and the roots of the teeth atrophies, and the flow of saliva diminishes; the gums tend to become inflamed and pull away from the teeth, exposing the base, making them unstable and elongating their appearance, especially the lower ones. Experts say they can gauge a person's age to within five years from the examination of a single tooth—if the person has any teeth left to examine.

Scrupulous dental care can help avert tooth loss, but growing old gets in the way. Arthritis, tremors, and small strokes, for example, make it difficult to brush and floss, and, because nerves become less sensitive with age, people may not realize that they have cavity and gum problems until it's too late. In the course of a normal lifetime, the muscles of the jaw lose about forty per cent of their mass and the bones of the mandible lose about twenty per cent, becoming porous and weak. The ability to chew declines, and people shift to softer foods, which are generally higher in fermentable carbohydrates and more likely to cause cavities. By the age of sixty, Americans have lost, on average, a third of their teeth. After eighty-five, almost forty per cent have no teeth at all.

Even as our bones and teeth soften, the rest of our body hardens. Blood vessels, joints, the muscle and valves of the heart, and even the lungs pick up substantial deposits of calcium and turn stiff. Under a microscope, the vessels and soft tissues display the same form

of calcium that you find in bone. When you reach inside an elderly patient during surgery, the aorta and other major vessels often feel crunchy under your fingers. A recent study has found that loss of bone density may be an even better predictor of death from atherosclerotic disease than cholesterol levels. As we age, it's as if the calcium flows out of our skeletons and into our tissues.

To maintain the same volume of blood flow through narrowed and stiffened blood vessels, the heart has to generate increased pressure. As a result, more than half of us develop hypertension by the age of sixty-five. The heart becomes thicker-walled from having to pump against the pressure, and less able to respond to the demands of exertion. The peak output of the heart decreases steadily from the age of thirty. People become gradually less able to run as far or as fast as they used to, or to climb a flight of stairs without becoming short of breath.

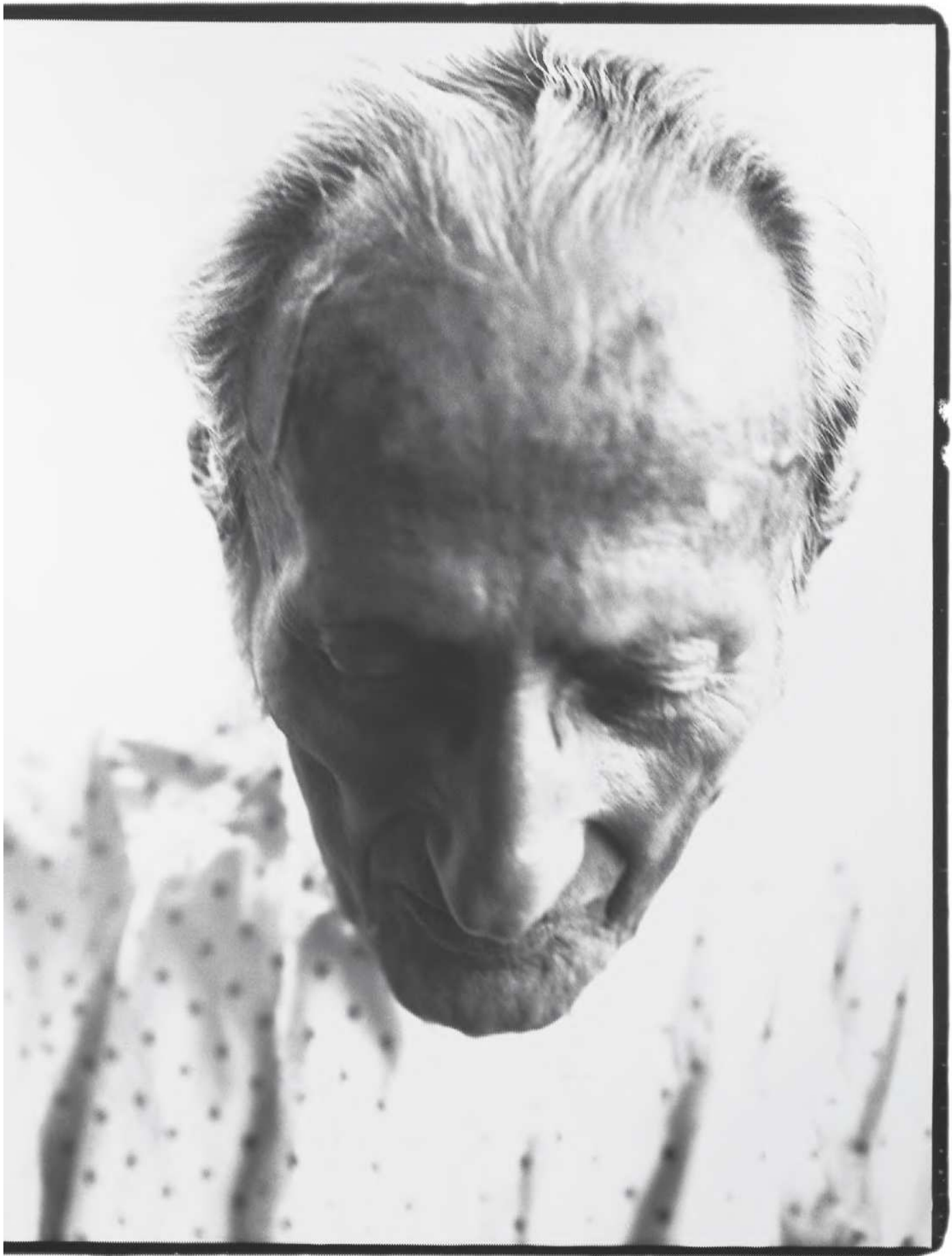
Why we age is the subject of vigorous debate. The classical view is that aging happens because of random wear and tear. A newer view holds that aging is more orderly and genetically driven. Proponents of this view point out that animals of similar species and exposure to wear and tear have markedly different life spans. The Canada goose has a longevity of 23.5 years; the emperor goose only 6.3 years. Perhaps animals are like plants, with lives that are, to a large extent, internally governed. Certain species of bamboo, for instance, form a dense stand that grows and flourishes for a hundred years, flowers all at once, and then dies.

The idea that living things shut down

PHOTOGRAPH BY RICHARD AVEDON

*Jacob Israel Avedon, Sarasota, Florida, December 19, 1972. This portrait is part of a series that the photographer made to record his father's last years.*





© 1972 THE RICHARD AVEDON FOUNDATION

and not just wear down has received substantial support in the past decade. Researchers working with the now famous worm *C. elegans* (two of the last five Nobel Prizes in medicine went to scientists doing work on the little nematode) were able to produce worms that live more than twice as long and age more slowly by altering a single gene. Scientists have since come up with single-gene alterations that increase the life spans of *Drosophila* fruit flies, mice, and yeast.

These findings notwithstanding, scientists do not believe that our life spans are actually programmed into us. After all, for most of our hundred-thousand-year existence—all but the past couple of hundred years—the average life span of human beings has been thirty years or less. (Research suggests that subjects of the Roman Empire had an average life expectancy of twenty-eight years.) Today, the average life span in developed countries is almost eighty years. If human life spans depend on our genetics, then medicine has got the upper hand. We are, in a way, freaks living well beyond our appointed time. So when we study aging what we are trying to understand is not so much a natural process as an unnatural one. Inheritance has surprisingly little influence on longevity. James Vaupel, of the Max Planck Institute for Demographic Research, in Rostock, Germany, notes that only six per cent of how long you'll live, compared with the average, is explained by your parents' longevity; by contrast, up to ninety per cent of how tall you are, compared with the average, is explained by your parents' height. Even genetically identical twins vary widely in life span: the typical gap is more than fifteen years.

If our genes explain less than we imagined, the wear-and-tear model may explain more than we knew. Leonid Gavrilov, a researcher at the University of Chicago, argues that human beings fail the way all complex systems fail: randomly and gradually. As engineers have long recognized, many simple devices do not age. They function reliably until a critical component fails, and the whole thing dies instantly. A windup toy works smoothly until a gear rusts or a spring breaks, and then it doesn't work at all. But complex systems—power plants,

say—have to survive and function despite having thousands of critical components. Engineers therefore design these machines with multiple layers of redundancy: with backup systems, and backup systems for the backup systems. The backups may not be as efficient as the first-line components, but they allow the machine to keep going even as damage accumulates. Gavrilov argues that, within the parameters established by our genes, that's exactly how human beings appear to work. We have an extra kidney, an extra lung, an extra gonad, extra teeth. The DNA in our cells is frequently damaged under routine conditions, but our cells have a number of DNA repair systems. If a key gene is permanently damaged, there are usually extra copies of the gene nearby. And, if the entire cell dies, other cells can fill in.

Nonetheless, as the defects in a complex system increase, the time comes when just one more defect is enough to impair the whole, resulting in the condition known as frailty. It happens to power plants, cars, and large organizations. And it happens to us: eventually, one too many joints are damaged, one too many arteries calcify. There are no more backups. We wear down until we can't wear down anymore.

**I**t happens in a bewildering array of ways. Hair grows gray, for instance, simply because we run out of the pigment cells that give hair its color. The natural life cycle of the scalp's pigment cells is just a few years. We rely on stem cells under the surface to migrate in and replace them. Gradually, however, the stem-cell reservoir is used up. By the age of fifty, as a result, half of the average person's hairs have gone gray.

Inside skin cells, the mechanisms that clear out waste products slowly break down and the muck coalesces into a clot of gooey yellow-brown pigment known as lipofuscin. These are

the age spots we see in skin. When lipofuscin accumulates in sweat glands, the sweat glands cannot function, which helps explain why we become so susceptible to heat stroke and heat exhaustion in old age.

The eyes go for different reasons. The lens is made of crystallin proteins that are tremendously durable, but they change chemically in ways that diminish their elasticity over time—hence the farsightedness that most people develop beginning in their fourth decade. The process also gradually yellows the lens. Even without cataracts (the whitish clouding of the lens caused by excessive ultraviolet exposure, high cholesterol, diabetes, cigarette smoking, and other unhelpful conditions), the amount of light reaching the retina of a healthy sixty-year-old is one-third that of a twenty-year-old.

I spoke to Felix Silverstone, who for twenty-four years was the senior geriatrician at the Parker Jewish Institute, in New York, and has published more than a hundred studies on aging. There is, he said, “no single, common cellular mechanism to the aging process.” Our bodies accumulate lipofuscin and oxygen free-radical damage and random DNA mutations and numerous other microcellular problems. The process is gradual and unrelenting. “We just fall apart,” he said.

**T**his is not an appealing prospect, and people naturally prefer to avoid the subject of their decrepitude. There have been dozens of best-selling books on aging, but they tend to have titles like “Younger Next Year,” “The Fountain of Age,” “Ageless,” “The Sexy Years.” Still, there are costs to averting our eyes from the realities. For one thing, we put off changes that we need to make as a society. For another, we deprive ourselves of opportunities to change the individual experience of aging for the better.

For nearly all of human existence, people died young. Life expectancy improved as we overcame early death—in particular, deaths from childbirth, infection, and traumatic injury. By the nineteen-seventies, just four out of every hundred people born in industrialized countries died before the age of thirty. It was an extraordinary achievement, but one that seemed to leave little room for



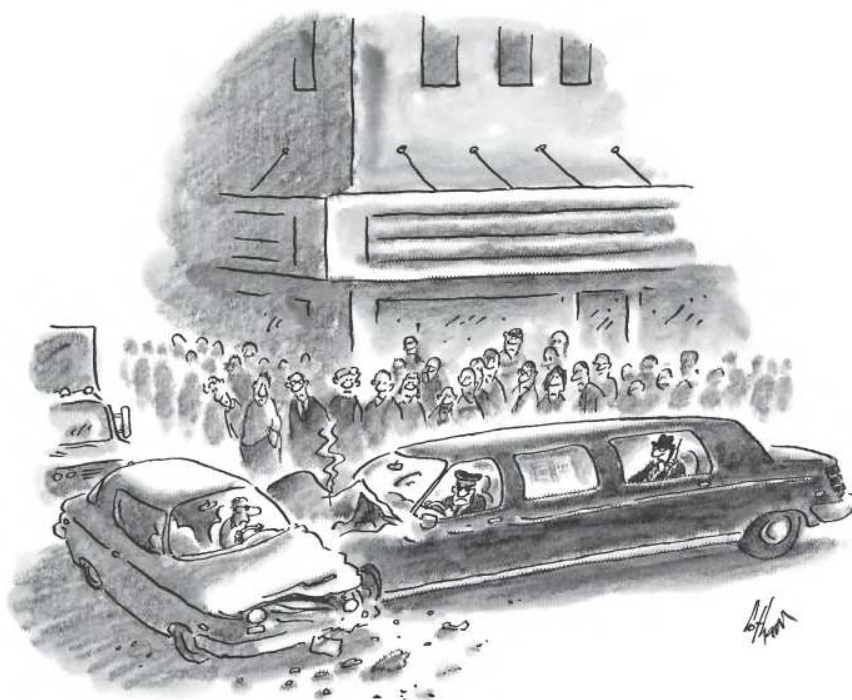


further gain; even *eliminating* deaths before thirty would not raise over-all life expectancy significantly. Efforts shifted, therefore, to reducing deaths during middle and old age, and, in the decades since, the average life span has continued upward. Improvements in the treatment and prevention of heart disease, respiratory illness, stroke, cancer, and the like mean that the average sixty-five-year-old can expect to live another nineteen years—almost four years longer than was the case in 1970. (By contrast, from the nineteenth century to 1970, sixty-five-year-olds gained just three years of life expectancy.)

The result has been called the “rectangularization” of survival. Throughout most of human history, a society’s population formed a sort of pyramid: young children represented the largest portion—the base—and each successively older cohort represented a smaller and smaller group. In 1950, children under the age of five were eleven per cent of the U.S. population, adults aged forty-five to forty-nine were six per cent, and those over eighty were one per cent. Today, we have as many fifty-year-olds as five-year-olds. In thirty years, there will be as many people over eighty as there are under five.

Americans haven’t come to grips with the new demography. We cling to the notion of retirement at sixty-five—a reasonable notion when those over sixty-five were a tiny percentage of the population, but completely untenable as they approach twenty per cent. People are putting aside less in savings for old age now than they have in any decade since the Great Depression. More than half of the very old now live without a spouse, and we have fewer children than ever before—yet we give virtually no thought to how we will live out our later years alone.

Equally worrying, and far less recognized, medicine has been slow to confront the very changes that it has been responsible for—or to apply the knowledge we already have about how to make old age better. Despite a rapidly growing elderly population, the number of certified geriatricians fell by a third between 1998 and 2004. Applications to training programs in adult primary-care medicine are plummeting, while fields like plastic surgery and radiology receive applications in



*“There’s been an accident, but it doesn’t involve me.”*

record numbers. Partly, this has to do with money—incomes in geriatrics and adult primary care are among the lowest in medicine. And partly, whether we admit it or not, most doctors don’t like taking care of the elderly.

“Mainstream doctors are turned off by geriatrics, and that’s because they do not have the faculties to cope with the Old Crock,” Felix Silverstone, the geriatrician, explained to me. “The Old Crock is deaf. The Old Crock has poor vision. The Old Crock’s memory might be somewhat impaired. With the Old Crock, you have to slow down, because he asks you to repeat what you are saying or asking. And the Old Crock doesn’t just have a chief complaint—the Old Crock has fifteen chief complaints. How in the world are you going to cope with all of them? You’re overwhelmed. Besides, he’s had a number of these things for fifty years or so. You’re not going to cure something he’s had for fifty years. He has high blood pressure. He has diabetes. He has arthritis. There’s nothing glamorous about taking care of any of those things.”

There is, however, a skill to it, a developed body of professional expertise. And until I visited my hospital’s geriat-

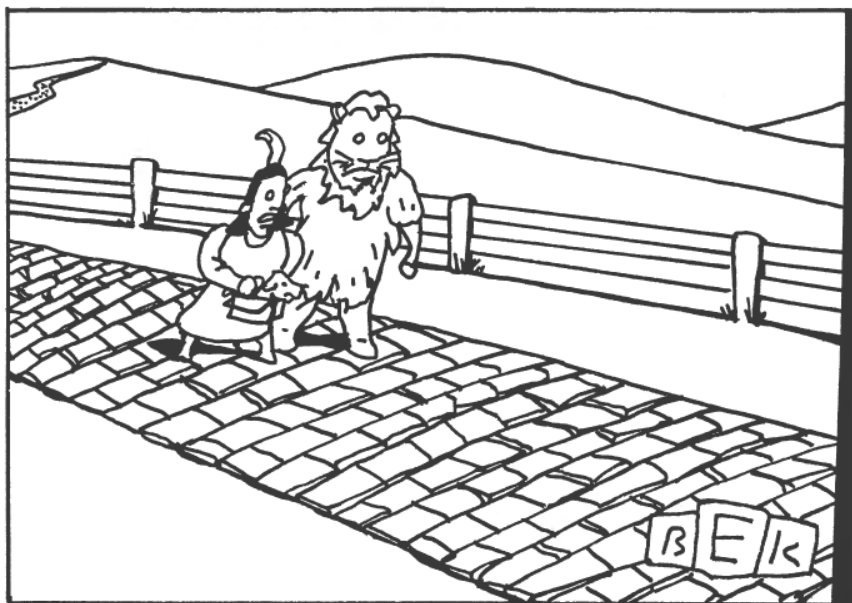
rics clinic and saw the work that geriatricians do, I did not fully grasp the nature of that expertise, or how important it could be for all of us.

The geriatrics clinic—or, as my hospital calls it, the Center for Older Adult Health—is only one floor below my surgery clinic. I pass by it almost every day, and I can’t remember ever giving it a moment’s thought. One morning, however, I wandered downstairs and, with the permission of the patients, sat in on a few visits with Juergen Bludau, the chief geriatrician.

“What brings you here today?” the doctor asked Jean Gavrilles, his first patient of the morning. She was eighty-five years old, with short, frizzy white hair, oval glasses, a lavender knit shirt, and a sweet, ready smile. Small but sturdy in appearance, she had come in walking steadily, her purse and coat clutched under one arm, her daughter trailing behind her, no support required beyond her mauve orthopedic shoes. She said that her internist had recommended that she come.

About anything in particular? the doctor asked.

The answer, it seemed, was yes and



*"There are probably a lot of great bravery workshops out there."*

no. The first thing she mentioned was a lower-back pain that she'd had for months, which shot down her leg and sometimes made it difficult to get out of bed or up from a chair. She also had bad arthritis, and she showed us her fingers, which were swollen at the knuckles and bent out to the sides with what's called a swan-neck deformity. She'd had both knees replaced a decade earlier. She had high blood pressure "from stress," she said, and handed him her list of medications. She had glaucoma and needed to have eye exams every four months. She never used to have "bathroom problems," but lately, she admitted, she'd started wearing a pad. She'd also had surgery for colon cancer and, by the way, now had a lung nodule that the radiology report said could be a metastasis—a biopsy was recommended.

Bludau asked her to tell him about her life. She said that she lived alone, except for her Yorkshire terrier, in a single-family house in the West Roxbury section of Boston. Her husband died of lung cancer twenty-three years ago. She did not drive. She had a son living in the area who did her shopping once a week and checked on her each day—"just to see if I'm still alive," she joked. Another son and two daughters lived farther away, but they helped as well. Otherwise, she took care of herself quite capably.

She did her own cooking and cleaning. She managed her medicines and her bills. "I have a system," she said. She had a high-school education, and during the war she'd worked as a riveter at the Charlestown Navy Yard. She also worked for a time at the Jordan Marsh department store in downtown Boston. But that was a long time ago. She stuck to home now, with her yard and her terrier and her family when they visited.

The doctor asked her about her day in great detail. She usually woke around five or six o'clock, she said—she didn't seem to need much sleep anymore. She would get out of bed as the back pain allowed, take a shower, and get dressed. Downstairs, she'd take her medicines, feed the dog, and eat breakfast. Bludau asked what she had for breakfast. Cereal and a banana. She hated bananas, she said, but she'd heard they were good for her potassium, so she was afraid to stop. After breakfast, she'd take her dog for a little walk in the yard. She did chores—laundry, cleaning, and the like. In the late morning, she took a break to watch "The Price Is Right." At lunchtime, she had a sandwich and orange juice. If the weather was nice, she'd sit out in the yard afterward. She'd loved working in her garden, but she couldn't do that anymore. The afternoons were slow. She might do some more chores. She might

nap or talk on the phone. Eventually, she would make dinner—a salad and maybe a baked potato or a scrambled egg. At night, she watched the Red Sox or the Patriots or college basketball—she loved sports. She usually went to bed at about midnight.

Bludau asked her to sit on the examining table. As she struggled to climb up, her balance teetering on the step, the doctor held her arm. He checked her blood pressure, which was normal. He examined her eyes and ears and had her open her mouth. He listened to her heart and lungs briskly, through his stethoscope. He began to slow down only when he looked at her hands. The nails were neatly trimmed.

"Who cuts your nails?" he asked.

"I do," Gavrilles replied.

I tried to think what could be accomplished in this visit. She was in good condition for her age, but she faced everything from advancing arthritis and incontinence to what might be metastatic colon cancer. It seemed to me that, with just a forty-minute visit, Bludau needed to triage by zeroing in on either the most potentially life-threatening problem (the possible metastasis) or the problem that bothered her the most (the back pain). But this was evidently not what he thought. He asked almost nothing about either issue. Instead, he spent much of the exam looking at her feet.

"Is that really necessary?" she asked, when he instructed her to take off her shoes and socks.

"Yes," he said. After she'd left, he told me, "You must always examine the feet." He described a bow-tied gentleman who seemed dapper and fit, until his feet revealed the truth: he couldn't bend down to reach them, and they turned out not to have been cleaned in weeks, suggesting neglect and real danger.

Gavrilles had difficulty taking her shoes off, and, after watching her struggle a bit, Bludau leaned in to help. When he got her socks off, he took her feet in his hands, one at a time. He inspected them inch by inch—the soles, the toes, the web spaces. Then he helped her get her socks and shoes back on and gave her and her daughter his assessment.

She was doing impressively well, he said. She was mentally sharp and physi-

cally strong. The danger for her was losing what she had. The single most serious threat she faced was not the lung nodule or the back pain. It was falling. Each year, about three hundred and fifty thousand Americans fall and break a hip. Of those, forty per cent end up in a nursing home, and twenty per cent are never able to walk again. The three primary risk factors for falling are poor balance, taking more than four prescription medications, and muscle weakness. Elderly people without these risk factors have a twelve-per-cent chance of falling in a year. Those with all three risk factors have almost a hundred-per-cent chance. Jean Gavrilles had at least two. Her balance was poor. Though she didn't need a walker, he had noticed her splay-footed gait as she came in. Her feet were swollen. The toenails were unclipped. There were sores between the toes. And the balls of her feet had thick, rounded calluses.

She was also on five medications. Each was undoubtedly useful, but, together, the usual side effects would include dizziness. In addition, one of the blood-pressure medications was a diuretic, and she seemed to drink few liquids, risking dehydration and a worsening of the dizziness. Her tongue was bone dry when Bludau examined it.

She did not have significant muscle weakness, and that was good. When she got out of her chair, he said, he noted that she had not used her arms to push herself up. She simply stood up—a sign of well-preserved muscle strength. From the details of the day she described, however, she did not seem to be eating nearly enough calories to maintain that strength. Bludau asked her whether her weight had changed recently. She admitted that she had lost about seven pounds in the previous six months.

The job of any doctor, Bludau later told me, is to support quality of life, by which he meant two things: as much freedom from the ravages of disease as possible, and the retention of enough function for active engagement in the world. Most doctors treat disease, and figure that the rest will take care of itself. And if it doesn't—if a patient is becoming infirm and heading toward a nursing home—well, that isn't really a *medical* problem, is it?

To a geriatrician, though, it *is* a medical problem. People can't stop the aging

of their bodies and minds, but there are ways to make it more manageable, and to avert at least some of the worst effects. So Bludau referred Gavrilles to a podiatrist, whom he wanted her to visit once every four weeks, for better care of her feet. He didn't see medications that he could eliminate, but he switched her diuretic to a blood-pressure medicine that wouldn't cause dehydration. He recommended that she eat a snack during the day, get all the low-calorie and low-cholesterol food out of the house, and see whether family or friends could join her for more meals. "Eating alone is not very stimulating," he said. And he asked her to see him again in three months, so that he could make sure the plan was working.

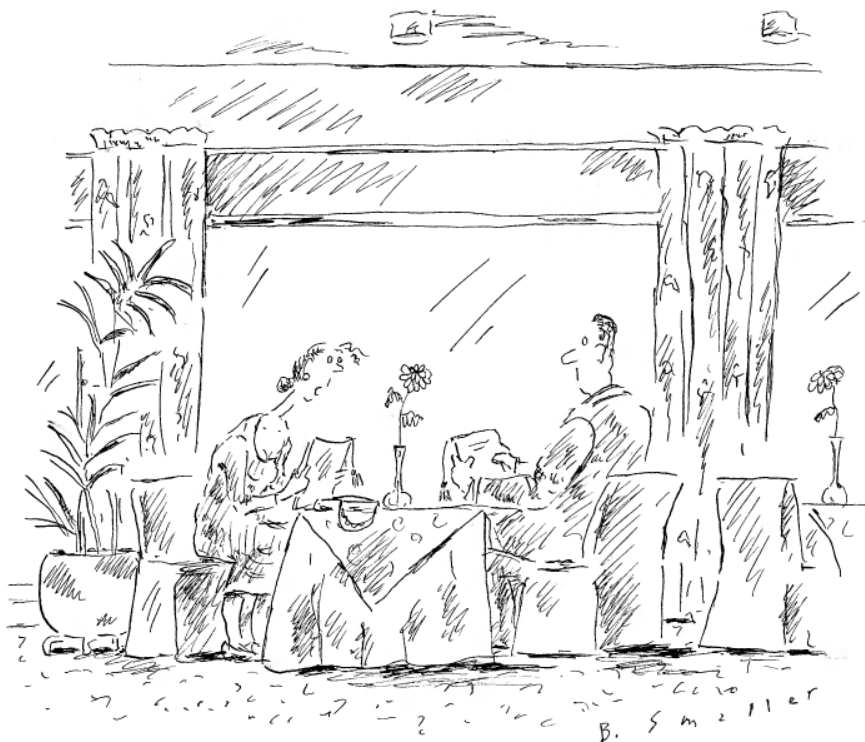
Nine months later, I checked in with Gavrilles and her daughter. She turned eighty-six this past November. She is eating better, and has even gained a pound or two. She still lives comfortably and independently in her own home. And she has not had a single fall.

**I**n the story of Jean Gavrilles and her geriatrician, there's a lesson about frailty. Decline remains our fate; death will come. But, until that last backup system inside each of us fails, decline can

occur in two ways. One is early and precipitately, with an old age of enfeeblement and dependence, sustained primarily by nursing homes and hospitals. The other way is more gradual, preserving, for as long as possible, your ability to control your own life.

Good medical care can influence which direction a person's old age will take. Most of us in medicine, however, don't know how to think about decline. We're good at addressing specific, individual problems: colon cancer, high blood pressure, arthritic knees. Give us a disease, and we can do something about it. But give us an elderly woman with colon cancer, high blood pressure, arthritic knees, and various other ailments besides—an elderly woman at risk of losing the life she enjoys—and we are not sure what to do.

Several years ago, researchers in St. Paul, Minnesota, identified five hundred and sixty-eight men and women over the age of seventy who were living independently but were at high risk of becoming disabled because of chronic health problems, recent illness, or cognitive changes. With their permission, the researchers randomly assigned half of them to see a team of geriatric specialists. The others were asked to see their usual physician,



*"Don't order anything that will embarrass me."*



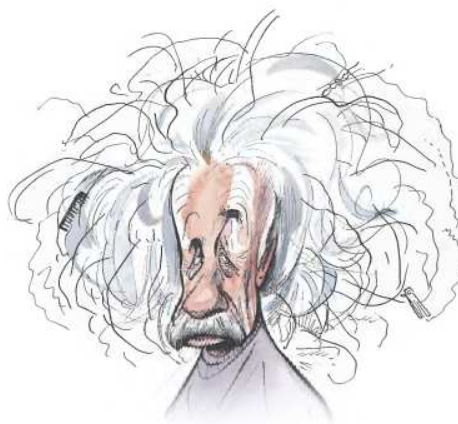
## EINSTEIN'S RULES BY ANDY BOROWITZ AND STEVE BRODNER

Einstein's earth-shaking concept of general relativity is directly juxtaposed, in Walter Isaacson's confidently authoritative "Einstein: His Life and Universe," with a set of household rules that the great man wrote to keep his first wife at bay. "You will stop talking to me if I request it," this document asserted. "You will not expect any intimacy from me, nor will you reproach me in any way." —*The Times*.



1. When I enter a room, you will address me as "Genius."

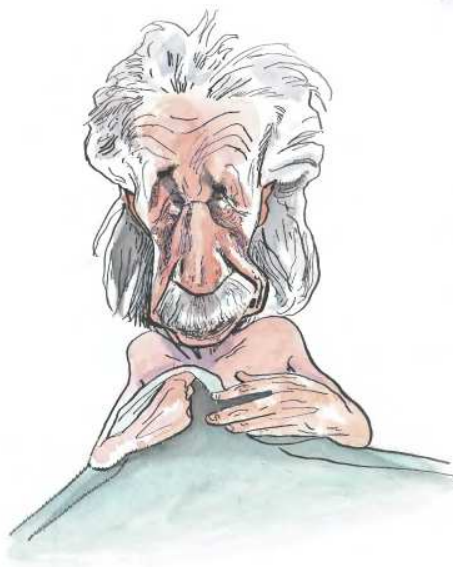
2. When you call me "Genius," you will be careful to do it in a sincere, respectful way, and not in the ironic, sassy way that is currently your wont.



3. Three words that are no longer allowed in our house: "bad," "hair," and "day."



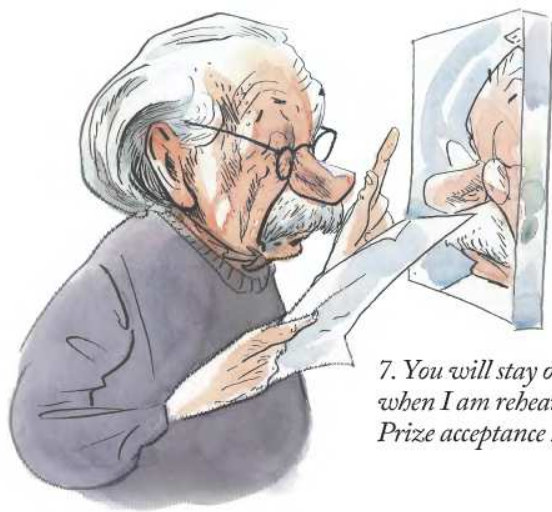
4. You will stop telling your friends that I am "not a rocket scientist."



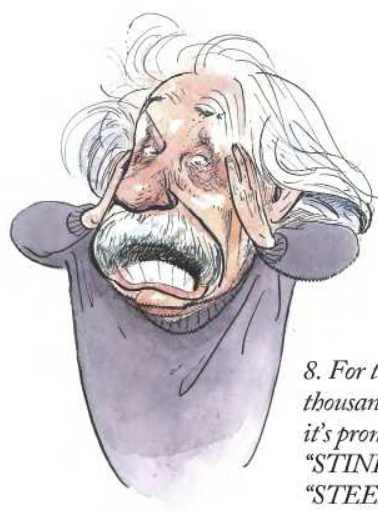
5. You will not expect me to make love to you. And on those rare occasions when I do make love to you, you will stop screaming out Linus Pauling's name.



6. You will stop calling me by my last name in a derisive manner, as you did last Sunday when I dropped a bowl of noodles on the floor and you said, "Nice move, Einstein."



7. You will stay out of the bathroom when I am rehearsing my Nobel Prize acceptance speech.



8. For the five-thousandth time: it's pronounced "STINE," not "STEEN."

who was notified of their high-risk status. Within eighteen months, ten per cent of the patients in both groups had died. But the patients who had seen a geriatrics team were a third less likely to become disabled and half as likely to develop depression. They were forty per cent less likely to require home health services.

Little of what the geriatricians had done was high-tech medicine: they didn't do lung biopsies or back surgery or PET scans. Instead, they simplified medications. They saw that arthritis was controlled. They made sure toenails were trimmed and meals were square. They looked for worrisome signs of isolation and had a social worker check that the patient's home was safe.

How do we reward this kind of work? Chad Boulton, who was the lead investigator of the St. Paul study and a geriatrician at the University of Minnesota, can tell you. A few months after he published his study, demonstrating how much better people's lives were with specialized geriatric care, the university closed the division of geriatrics.

"The university said that it simply could not sustain the financial losses," Boulton said from Baltimore, where he is now a professor at the Johns Hopkins Bloomberg School of Public Health. On average, in Boulton's study, the geriatric services cost the hospital \$1,350 more per person than the savings they produced, and Medicare, the insurer for the elderly, does not cover that cost. It's a strange double standard. No one insists that a twenty-five-thousand-dollar pacemaker or a coronary-artery stent save money for insurers. It just has to *maybe* do people some good. Meanwhile, the twenty-plus members of the proven geriatrics team at the University of Minnesota had to find new jobs. Scores of medical centers across the country have shrunk or closed their geriatrics units. Several of Boulton's colleagues no longer advertise their geriatric training for fear that they'll get too many elderly patients. "Economically, it has become too difficult," Boulton said.

But the finances are only a symptom of a deeper reality: people have not insisted on a change in priorities. We all like new medical gizmos and demand that policymakers make sure they are paid for. They feed our hope that the

troubles of the body can be fixed for good. But geriatricians? Who clamors for geriatricians? What geriatricians do—bolster our resilience in old age, our capacity to weather what comes—is both difficult and unappealingly limited. It requires attention to the body and its alterations. It requires vigilance over nutrition, medications, and living situations. And it requires each of us to contemplate the course of our decline, in order to make the small changes that can reshape it. When the prevailing fantasy is that we can be ageless, the geriatrician's uncomfortable demand is that we accept we are not.

For Felix Silverstone, understanding human aging has been the work of a lifetime. He was a national leader in geriatrics for five decades. But he is now himself eighty-seven years old. He can feel his own mind and body wearing down, and much of what he spent his career studying is no longer abstract to him.

Felix has been fortunate. He didn't have to stop working, even after he suffered a heart attack in his sixties which cost him half his heart function; nor was he stopped by a near-cardiac arrest at the age of seventy-nine. "One evening, sitting at home, I suddenly became aware of palpitations," he told me. "I was just reading, and a few minutes later I became short of breath. A little bit after that, I began to feel heavy in the chest. I took my pulse, and it was over two hundred." He is the sort of person who, in the midst of chest pain, would take the opportunity to examine his own pulse. "My wife and I had a little discussion about whether or not to call an ambulance. We decided to call."

When Felix got to the hospital, the doctors had to shock him to bring his heart back. He'd had ventricular fibrillation, and an automatic defibrillator had to be installed in his chest. Within a few weeks, though, he felt well again, and his doctor cleared him to return to work full time. He stayed in medical practice after the attack, multiple hernia repairs, gallbladder surgery, arthritis that ended his avid piano playing, compression fractures of his aging spine that stole three full inches of his once five-foot-seven-inch height, and hearing loss. "I switched to an elec-

tronic stethoscope," he said. "They're a nuisance, but they're very good."

Finally, at eighty-two, he had to retire. The problem wasn't his health; it was that of his wife, Bella. They'd been married for more than sixty years. Felix had met Bella when he was an intern and she was a dietitian at Kings County Hospital, in Brooklyn. They brought up two sons in Flatbush. When the boys left home, Bella got her teaching certification and began working with children who had learning disabilities. In her seventies, however, retinal disease diminished her vision, and she had to stop working. A decade later, she became almost completely blind. Felix no longer felt safe leaving her at home alone, and in 2001 he gave up his practice. They moved to Orchard Cove, a retirement community in Canton, Massachusetts, outside Boston, where they could be closer to their sons.

"I didn't think I would survive the change," Felix said. He'd observed in his patients how difficult the transitions of age could be. Examining his last patient, packing up his home, he felt that he was about to die. "I was taking apart my life as well as the house," he recalled. "It was terrible."

We were sitting in a library off Orchard Cove's main lobby. There was light streaming through a picture window, tasteful art on the walls, white-upholstered Federal-style armchairs. It was like a nice hotel, only with no one under seventy-five walking around. Felix and Bella have a two-bedroom apartment with forest views and plenty of space. In the living room, he has his grand piano and, at his desk, piles of medical journals that he still subscribes to—"for my soul," he said. Theirs is an independent-living unit. It comes with housekeeping, linen changes, and dinner each evening. When they need to, they can upgrade to assisted living, which provides three prepared meals and up to an hour with a personal-care assistant each day.

This was not the average retirement community, but even in an average one rent runs thirty-two thousand dollars a year. Entry fees are typically sixty thousand to a hundred and twenty thousand dollars on top of that. Meanwhile, the median income of people eighty and older is only about fifteen thousand



dollars. More than half of the elderly who live in long-term-care facilities go through their entire savings and have to go on Medicaid—welfare—in order to afford it. And, ultimately, the average American spends a year or more of his old age disabled and living in a nursing home (at twice the cost), which is a destination Felix desperately hopes to avoid.

He tries to note the changes he's experiencing objectively, like a good geriatrician. He notices that his skin has dried out. His sense of smell has diminished. His night vision has become poor. He tires easily. He has begun to lose teeth. He takes measures where he can. He uses lotion to avoid skin cracks; he protects himself from the heat; he gets on an exercise bike three times a week; he sees a dentist twice a year.

He's most concerned about the changes in his brain. "I can't think as clearly as I used to," he said. "I used to be able to read the *Times* in half an hour. Now it takes me an hour and a half." Even then, he's not sure that he has understood as much as he did before, and his memory gives him trouble. "If I go back and look at what I've read, I recognize that I went through it, but sometimes I don't really remember it," he said. "It's a matter of short-term registration. It's hard to get the signal in and have it stay put."

He makes use of methods that he once taught his patients. "I try to deliberately focus on what I'm doing, rather than do it automatically," he told me. "I haven't lost the automaticity of action, but I can't rely on it the way I used to. For example, I can't think about something else and get dressed and be sure I've gotten all the way dressed." He recognizes that the strategy doesn't always work. He sometimes told me the same story twice in a conversation. The lines of thought in his mind would fall into well-worn grooves and, however hard he tried to put them onto a new path, sometimes they resisted. Felix's knowledge as a geriatrician has forced him to recognize his own decline, but that hasn't made it easier to accept.

"I get blue occasionally," he said. "I

think I have recurring episodes of depression. They are not enough to disable me, but they are . . ." He paused to find the right word. "They are uncomfortable."

What buoys him, despite his limitations, is having a purpose. It's the same purpose, he says, that sustained him in medicine: to be of service, in some way, to those around him. He had been in Orchard Cove for only a few months before he was helping to steer a committee to improve the health-care services there. He tried to form a journal-reading club for retired physicians. He even guided a young geriatrician through her first independent-research study—a survey of the residents' attitudes toward Do Not Resuscitate orders.

More important is the responsibility that he feels for his children and grandchildren—and, most of all, for Bella. Her blindness and recent memory troubles have made her deeply dependent. Without him, I suspect, she would probably be in a nursing home. He helps her dress. He administers her medicines. He makes her breakfast and lunch. He takes her on walks and to doctors' appointments. "She is my purpose now," he said. Bella doesn't always like his way of doing things. "We argue constantly—we're at each other about a lot of things," Felix said. "But we're also very forgiving."

He does not feel this responsibility to be a burden. With the narrowing of his own life, his ability to look after Bella has become his main source of self-worth. "I am exclusively her caregiver," he said. "I am glad to be." And this role has heightened his sense that he must be attentive to the changes in his own capabilities; he is no good to her if he isn't honest with himself about what he can and can't do.

One evening, Felix invited me to dinner. The formal dining hall was restaurant-like, with reserved seating, table service, and jackets required. I was wearing my white hospital coat and had to borrow a navy blazer from the maitre d'. Felix, in a brown suit and a stone-colored oxford shirt, gave his arm to Bella, who wore a blue-flowered knee-length dress that he'd picked out for her, and guided her to the table. She was amiable and chatty

and had youthful-seeming eyes. But, once she'd been seated, she couldn't find the plate in front of her, let alone the menu. Felix ordered for her: wild-rice soup, an omelette, mashed potatoes, and mashed cauliflower. "No salt," he instructed the waiter; she had high blood pressure. He ordered salmon and mashed potatoes for himself. I had the soup and a London broil.

When the food arrived, Felix told Bella where she could find the different items on her plate by the hands of a clock. He put a fork in her hand. Then he turned to his own meal.

Both made a point of chewing slowly. She was the first to choke. It was the omelette. Her eyes watered. She began to cough. Felix guided her water glass to her mouth. She took a drink and managed to get the omelette down.

"As you get older, the lordosis of your spine tips your head forward," he said to me. "So when you look straight ahead it's like looking up at the ceiling for anyone else. Try to swallow while looking up: you'll choke once in a while. The problem is common in the elderly. Listen." I realized that I could hear someone in the dining room choking on his food every minute or so. Felix turned to Bella. "You have to eat looking down, sweetie," he said.

A couple of bites later, though, he himself was choking. It was the salmon. He began coughing. He turned red. Finally, he was able to cough up the bite. It took a minute for him to catch his breath. "Didn't follow my own advice," he said.

Felix Silverstone is, without question, up against the debilities of his years. Once, it would have been remarkable simply to have lived to see eighty-seven. Now what's remarkable is that he has the control over his life that he does. When he started in geriatric practice, it was almost inconceivable that an eighty-seven-year-old with his history of health problems could live independently, care for his disabled wife, and continue to contribute to research. Even today, most people his age cannot live as he does.

Partly, he has been lucky. His memory, for example, has not deteriorated significantly. But he has also managed his old age well. His goal has been modest: to have as decent a life as medical knowledge and the limits of his



body will allow. So he saved and did not retire early, and therefore is not in financial straits. He kept his social contacts, and avoided isolation. He monitored his bones and teeth and weight. And he has made sure to find a doctor who had the geriatric skills to help him hold on to an independent life.

I asked Chad Boulton, the geriatrics professor now at Johns Hopkins, what can be done to insure that there are enough geriatricians for our country's surging elderly population. "Nothing," he said. "It's too late." Creating geriatricians takes years, and we already have far too few. This year, just three hundred doctors will complete geriatrics training, not nearly enough to replace the geriatricians going into retirement, let alone meet the needs of the next decade.

Yet Boulton believes that we still have time for another strategy: he would direct geriatricians toward training all primary-care doctors in caring for the very old, instead of providing the care themselves. Even this is a tall order—ninety-seven per cent of medical students take no course in geriatrics, and the strategy requires that the nation pay geriatricians to teach rather than to provide patient care. But, if the will is there, Boulton estimates that it would be possible to establish courses in every medical school and internal-medicine training program within a decade. "We've got to do something," he said. "Life for older people can be better than it is today."

Boulton and his colleagues have yet another strategy, just in case—a strategy that they have called Guided Care, and that doesn't depend on doctors at all. They're recruiting local nurses for a highly compressed, three-week course in how to recognize specific problems in the elderly, such as depression, malnutrition, isolation, and danger of falling; how to formulate a plan to remedy those problems; and how to work with patients, families, and doctors to follow through on the plan. In a test of the strategy, the researchers are putting the nurses to work in primary-care practices around Baltimore and Washington, D.C., and studying the results. It is a meagre solution for a huge problem, but it is cheap, which insurers demand, and, if it provides even a frac-



tion of the benefit geriatricians have, it could nudge medical care in the right direction.

"I can still drive, you know," Felix Silverstone said to me. "I'm a very good driver."

After our dinner together, he had to go on an errand to refill Bella's prescriptions in Stoughton, a few miles away, and I asked if I could go along. He had a gold 1998 Toyota Camry with automatic transmission and thirty-nine thousand miles on the odometer. It was pristine, inside and out. He backed out of a narrow parking space and zipped out of the garage. His hands did not shake. Taking the streets of Canton at dusk on a new-moon night, he brought the car to an even stop at the red lights, signalled when he was supposed to, took turns without a hitch.

I was, I admit, braced for disaster. The risk of a fatal car crash with a driver who's eighty-five or older is more than three times higher than it is with a driver between sixteen and twenty. The very old are the highest-risk drivers on the road. This past fall, in Los Angeles, George

Weller was convicted of manslaughter after he confused the accelerator with the brake pedal and plowed his Buick into a crowd of shoppers at the Santa Monica Farmers' Market. Ten people were killed, and more than sixty were injured. He was eighty-six.

But Felix showed no difficulties. At one point during our drive, poorly marked road construction at an intersection channelled our line of cars almost directly into oncoming traffic. Felix corrected course swiftly, pulling over into the proper lane. There is no saying how much longer he will be able to count on his driving ability. The day may well come when he will have to give up his keys.

At the moment, though, he wasn't concerned; he was glad simply to be on the road. The evening traffic was thin as he turned onto Route 138. He brought the Camry to a tick over the forty-five-mile-per-hour speed limit. He had his window rolled down and his elbow on the sash. The air was clear and cool, and we listened to the sound of the wheels on the pavement.

"The night is lovely, isn't it?" he said. ♦